

JGJ3 HCCUTCH/10 20 MAR 2002

112740-550

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

10 / 088763

INTERNATIONAL APPLICATION NO.  
PCT/DE00/03259INTERNATIONAL FILING DATE  
19 September 2000PRIORITY DATE CLAIMED  
23 September 1999TITLE OF INVENTION  
**INTERNET TELEPHONE ADAPTER**

APPLICANT(S) FOR DO/EO/US

Josef Baumeister et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1.  This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2.  This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3.  This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4.  The US has been elected by the expiration of 19 months from the priority date (Article 31).
5.  A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a.  is attached hereto (required only if not communicated by the International Bureau).
  - b.  has been communicated by the International Bureau.
  - c.  is not required, as the application was filed in the United States Receiving Office (RO/US).
6.  An English language translation of the International Application as filed (35 U.S.C. 371(c)(2))
  - a.  is attached hereto.
  - b.  has been previously submitted under 35 U.S.C. 154(d)(4).
7.  Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a.  are attached hereto (required only if not communicated by the International Bureau).
  - b.  have been communicated by the International Bureau.
  - c.  have not been made; however, the time limit for making such amendments has NOT expired.
  - d.  have not been made and will not be made.
8.  An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9.  An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10.  An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11.  A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12.  A copy of the International Search Report (PCT/ISA/210).

**Items 13 to 20 below concern document(s) or information included:**

13.  An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14.  An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15.  A **FIRST** preliminary amendment.
16.  A **SECOND** or **SUBSEQUENT** preliminary amendment.
17.  A substitute specification.
18.  A change of power of attorney and/or address letter.
19.  A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20.  A second copy of the published international application under 35 U.S.C. 154(d)(4).
21.  A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22.  Certificate of Mailing by Express Mail
23.  Other items or information:

24. The following fees are submitted:

**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):**

|  |           |
|--|-----------|
| <input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... | \$1040.00 |
| <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO .....  | \$890.00  |
| <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....  | \$740.00  |
| <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) .....   | \$710.00  |
| <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) .....   | \$100.00  |

JC13 Rec'd PCT/PTO 20 MAR 2002

**CALCULATIONS PTO USE ONLY****ENTER APPROPRIATE BASIC FEE AMOUNT =**Surcharge of **\$130.00** for furnishing the oath or declaration later than  
months from the earliest claimed priority date (37 CFR 1.492 (e)).  20  30**\$890.00****\$0.00**

| CLAIMS   | NUMBER FILED | NUMBER EXTRA | RATE                     |               |
|--|--------------|--------------|--------------------------|---------------|
| Total claims                                     | 13 - 20 =    | 0            | x \$18.00                | <b>\$0.00</b> |
| Independent claims                               | 1 - 3 =      | 0            | x \$84.00                | <b>\$0.00</b> |
| Multiple Dependent Claims (check if applicable). |              |              | <input type="checkbox"/> | <b>\$0.00</b> |

**TOTAL OF ABOVE CALCULATIONS =****\$890.00**

Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.

**SUBTOTAL =** **\$890.00**Processing fee of **\$130.00** for furnishing the English translation later than  
months from the earliest claimed priority date (37 CFR 1.492 (f)).  20  30 + **\$0.00****TOTAL NATIONAL FEE =** **\$890.00**Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be  
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). **\$0.00****TOTAL FEES ENCLOSED =** **\$890.00**

|                      |           |
|----------------------|-----------|
| <b>Amount to be:</b> | <b>\$</b> |
| <b>refunded</b>      |           |
| <b>charged</b>       | <b>\$</b> |

- A check in the amount of **\$890.00** to cover the above fees is enclosed.
- Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \_\_\_\_\_ to cover the above fees. A duplicate copy of this sheet is enclosed.
- The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **02-1818** A duplicate copy of this sheet is enclosed.
- Fees are to be charged to a credit card. **WARNING: Information on this form may become public. Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

William E. Vaughan (Reg. No. 39,056)  
Bell, Boyd & Lloyd LLC  
P.O. Box 1135  
Chicago, Illinois 60690  
312-807-4292

SIGNATURE

William E. Vaughan

NAME

39,056

REGISTRATION NUMBER

March 20, 2002

DATE

5 BOX PCT

IN THE UNITED STATES ELECTED/DESIGNATED OFFICE  
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE  
UNDER THE PATENT COOPERATION TREATY-CHAPTER II

5 PRELIMINARY AMENDMENT

APPLICANTS: Josef Baumeister et al. DOCKET NO.: 112740-550  
SERIAL NO: GROUP ART UNIT:  
FILED: EXAMINER:  
INTERNATIONAL APPLICATION NO.: PCT/DE00/03259  
INTERNATIONAL FILING DATE 19 September 2000  
INVENTION: INTERNET TELEPHONE ADAPTER

10 Assistant Commissioner for Patents,  
Washington, D.C. 20231

Sir:

Please amend the above-identified International Application before entry into the National stage before the U.S. Patent and Trademark Office under 35 U.S.C. §371 as follows:

15 In the Specification:

Please replace the Specification of the present application, including the Abstract, with the following Substitute Specification:

## SPECIFICATION

### TITLE OF THE INVENTION

#### 5 INTERNET TELEPHONE ADAPTER

#### BACKGROUND OF THE INVENTION

The present invention relates to an Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks and, in particular, to an Internet telephone adapter for cordless applications.

10 The volume of voice and data links in communications networks using subscriber terminals, such as telephones, mobiles and computer units (PC), is growing at a great rate both in the business sector and in the private sector. For this continuously growing communication volume, incredible sums of money are spent every year both in the business sector and in the private sector.

15 Voice links normally have been set up over "line-switching networks," where a direct (point-to-point) link, as it were, has been set up between the call parties. By contrast, for the data traffic, "data networks" have been used which, as packet-switching networks, packaged the data to be transferred into individual packets and sent them to a receiver via a wide variety of paths. Particularly as a result of the 20 aggregation of a multiplicity of packet-switching networks in the "Internet," a worldwide packet-switching network has been created which can be used to transfer data, particularly in a relatively inexpensive manner.

25 To utilize this great difference in cost between line-switching networks and packet-switching networks, the company Vocaltec has proposed the "Internet phone," which also permits a voice link over a packet-switching network, such as the Internet. Figure 3 shows a simplified illustration of such an Internet phone configuration in which a voice link between two subscribers is set up over a packet-switching network 1.

30 In Figure 3, a subscriber terminal TE(A) includes a computer unit PC (personal computer) which has a sound card (not shown) with a connected loudspeaker LA and a microphone MI. The computer unit PC also has a subscriber access adapter (e.g., modem), which is not shown but which is connected to a service provider 2a (SP) via a

subscriber line TL. In this case, the service provider 2a, as a node in a packet-switching bidirectional communications network 1, such as the Internet, provides access to this network.

5 In the same way, a second call party has a subscriber terminal TE(B) having a computer unit PC and an associated sound card with a connected microphone MI and a loudspeaker LA, the computer unit PC again setting up a connection to a service provider 2b (SP), preferably via a subscriber access adapter in the form of a modem. The service provider 2b again has an access facility to the packet-switching bidirectional communications network 1.

10 To set up a voice link between the subscriber terminal TE(A) and the subscriber terminal TE(B) over the packet-switching network 1, the computer units PC in question are operated using a program (e.g., from Vocaltec) wherein the voice data recorded by the respective microphone are transferred, packaged into small packets, over the packet-switching network 1 and are assembled at the receiver end such that a 15 continuous voice signal is, in turn, obtained at the loudspeaker LA. In this way, it is possible to set up an extremely inexpensive voice link throughout the world over the Internet, for example.

20 However, a drawback of such a solution is that it is not possible to use conventional telephones and, hence, a connection can be set up only between two Internet telephones having appropriate computer units PC.

25 The document WO 98/42104 has, therefore, disclosed a system and a method for setting up a voice link over both a packet-switching network and a line-switching network which now also allow "Internet telephones" to be connected to "normal telephones." In this context, however, the Internet telephones still include a computer-assisted system with a microphone and a loudspeaker and a specifically aligned local service provider for coupling both the line-switching data and the packet-switching data.

30 The document US 5,838,665 describes another adapter apparatus which can be used to couple the Internet telephone systems described above to conventional telephones. In this context, connecting a normal telephone to an "Internet telephone system" makes it possible to provide, by way of example, multiparty services, etc., between the different systems. However, a drawback with this system is that a

computer assisted terminal unit (PC) still produces the “Internet telephone,” which is why it is rejected by a large number of users.

The present invention is, therefore, directed toward providing an Internet telephone adapter for setting up voice/data links in line-switching networks and 5 packet-switching networks which is both inexpensive and user friendly.

#### SUMMARY OF THE INVENTION

Pursuant to the present invention, use is made of a base unit having a transfer method evaluation unit which, on the basis of the type of voice/data link identified, 10 performs data conversion between the data on a subscriber terminal interface and the packet-switching network or the line-switching network results in an Internet telephone adapter which is extremely simple to use and, without using a complicated computer system (PC), turns any conventional subscriber terminal into a terminal which allows a voice/data link both over line-switching networks and over packet-15 switching networks.

Preferably, the subscriber terminal interface includes a DECT interface based on the ETSI standard, and the standard data interface includes a serial V.24 interface based on the ITU standard. Such an embodiment already has been implemented, by way of example, in the Gigaset M101 data terminal from the company Siemens, which 20 allows conventional cordless telephones to be converted into cordless Internet telephones via a slight modification to the base station operating as base unit. In this context, the subscriber access adapter used preferably can be an analog voice modem or a digital ISDN access adapter.

Preferably, the data conversion in the base unit for a connection over the 25 packet-switching network involves performing TCP/IP data protection, which results in an alignment with the Internet.

Particularly when a cordless application is used, the data conversion involves converting the received voice/data information from a DECT-GAP standard to the Voice-Over-IP protocol and vice versa.

30 Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

## BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows a simplified illustration of an Internet telephone system with an inventive Internet telephone adapter.

Figure 2 shows a schematic illustration of a protocol structure for the system  
5 shown in Figure 1.

Figure 3 shows a simplified illustration of an Internet telephone system based  
on the prior art.

## DETAILED DESCRIPTION OF THE INVENTION

Figure 1 shows a simplified illustration of an Internet telephone system for  
10 setting up a voice/data link over a line-switching network 1' or a packet-switching  
network 1. In Figure 1, a subscriber terminal TE is connected via a subscriber terminal  
interface LS to the Internet telephone adapter ITA, which is itself connected to a  
service provider 2 (SP) via a subscriber line TL. In Figure 1, the service provider 2  
allows connection both to a packet-switching network 1, which preferably includes the  
15 Internet, or to a line-switching network 1', which preferably includes a public  
telephone network (Public Switched Telephone Network, PSTN).

As has already been described above, voice and data are packaged into packets  
in the packet-switching network 1 and are sent to the network 1 using a destination  
address. When they have arrived at the destination address, the individual packets are  
20 assembled again according to their prescribed order and are output on a subscriber (not  
shown). By contrast, in the line-switching network 1', a direct connection is set up  
between the respective subscribers, and the information is transferred in the form of  
voice or data.

The Internet telephone adapter ITA essentially includes a base unit B which is  
25 connected to a subscriber access adapter VM via a standard data interface V.24.

In the preferred exemplary embodiment shown in Figure 1, the subscriber  
terminal TE includes a cordless telephone for setting up an air interface LS based on  
the ETSI standard DECT. Since such a subscriber terminal TE is able to transmit only  
voice, the air interface LS is based on the DECT-GAP standard. At the opposite end,  
30 the air interface LS shown in Figure 1 is set up by a base station which acts as a base  
unit B and preferably corresponds essentially to the cordless GIGASET M101 data  
terminal from Siemens. Such a base unit essentially includes an air interface unit LE

for setting up the air interface LS, a data interface unit SS for setting up the standard data interface V.24, and a control unit SE which controls both the air interface unit LE and the data interface unit SS. Preferably, the standard data interface V.24 used is a serial interface based on ITU-V.24 standard. It is also possible to use any other 5 interface, however, such as parallel interfaces, USB, fire wire, etc.

On the standard data interface V.24, the subscriber access adapter VM is connected in order to set up a connection to the service provider 2 (SP). Preferably, the subscriber access adapter VM includes an “analog voice modem,” which permits the transfer of information both in a data format using a modem M or in a voice format 10 using a digital/analog converter unit V (voice). In this context, the respective transfer is selected via a selection unit AE, which preferably can be programmed with the aid of standardized AT-Hayes commands using the standard data interface V.24.

To set up an “Internet voice/data link,” it is necessary for a multiplicity of functions, preferably performed by the control unit SE, to be implemented in the base 15 unit B. Particularly when the data terminal GIGASET M101 is used, the inventive Internet telephone adapter ITA can be produced by slightly modifying (software, firmware) the base unit B and using a conventional voice modem VM. In this context, the control unit SE in the base unit B needs to implement a dialing evaluation unit which makes it possible to distinguish a normal voice/data link (i.e., a link over the 20 line-switching network 1’), from an Internet voice/data link (i.e., a link over the packet-switching network 1). For this purpose, a number plan is designed, for example, which makes it possible to make this distinction using currently available dialing digits (such as 0 to 9, \*, #).

In the case of an Internet voice/data link initiated with “#,” for example, a 25 selection to be produced by the base unit B includes the IP address (IP, Internet protocol) of the required call party. In this case, the base unit B also uses the standard data interface V.24 to select a modem mode on the voice modem, as a result of which the information is sent in the data format via the modem M to the service provider 2 with the IP address produced.

30 If, on the other hand, a normal voice/data link is to be set up (e.g., a normal telephone number is dialed without “#” in front), then the base unit B needs to actuate the selection unit AE in the voice modem VM such that the converter unit V is

selected and the voice data are forwarded transparently, as it were, to the service provider 2. Since there is no IP address in this case, the service provider 2 would set up the link over the network 1'.

In another case (not shown), the air interface LS also can be used to connect a 5 data subscriber terminal which transmits exclusively data. These data are, in turn, transmitted by the voice modem VM using the modem M, but with no IP address being added. The IP address now can be used by the service provider 2 to establish whether transmission is to be produced using the packet-switching network 1 (i.e., over the Internet), or a conventional connection over the line-switching network 1'.

10 To set up an Internet voice/data link, however, it is not yet sufficient to add an IP address on the basis of the evaluated dialing digits from the subscriber terminal TE. Instead, the base unit B needs to set up data conversion between the air interface LS and the protocol required for the packet-switching network 1.

Figure 2 shows a schematic illustration of a protocol structure for the Internet 15 telephone system shown in Figure 1. Figure 2 describes the protocol structure for the preferred exemplary embodiment including a DECT-GAP mobile part or subscriber terminal TE and an AT-Hayes voice modem VM connected via a serial V.24 interface. Accordingly, a DECT-GAP protocol is used between subscriber terminal TE and base 20 unit B on the air interface LS. The control unit SE in the base unit B implements a data conversion unit IWU (interworking unit) whose task is to connect the different protocol domains to one another. More precisely, the data conversion unit IWU in the base unit B monitors connection setup on the air interface side using its associated DECT-GAP protocol, with setup of a connection being accepted and the dialing which 25 comes from the cordless subscriber terminal TE (i.e., the dialing digits 0 to 9, \*, #, etc.), being evaluated. When an Internet voice/data link is identified (e.g., "#" in front), the base unit B switches the voice modem VM to modem mode, and the modem M is prompted to dial up the service provider 2. Once the connection has been set up, the data sent by the air interface LS are converted on the basis of the Voice-Over-IP protocol and are sent, protected via TCP/IP data protection (transfer control 30 protocol/Internet protocol), to the IP address obtained in the dialing.

Particularly when the subscriber access adapter VM includes a voice modem, it is possible to set up not only the Internet/data link but also a normal voice/data link

over the line-switching network 1'. In this case, for example when the dialing digit “#” is not included, the Internet protocols (TCP/IP, Voice-Over-IP protocol) are avoided by the data conversion unit IWU and the number, or dialing digits, received from the cordless subscriber terminal TE are forwarded to the voice modem VM using 5 AT-Hayes commands, for example, in order to prompt the voice modem VM to dial this number. In this case, the information sent by the subscriber terminal TE is forwarded as voice data by the service provider 2 over the line-switching network 1'.

In order, on the other hand, to be able to receive an incoming internal voice/data link, the Internet telephone adapter ITA naturally needs to be “online.” For 10 this purpose, the service provider 2 can provide certain services which allow not only dialing into the Internet or packet-switching network 1, but also calling from the packet-switching network 1.

In this way, the subscriber terminal TE also can be reached constantly via an Internet/data link.

15 The Internet telephone adapter described above has been described with reference to Figures 1 and 2 using a cordless subscriber terminal and an analog subscriber access adapter. It is not limited to these, however, but rather includes any other subscriber terminal interfaces for connecting subscriber terminals, such as data terminals, corded telephones, etc. In this context, the air interface used is preferably a 20 DECT interface based on the ETSI standard. However, it is also possible to use, by way of example, the PHS air interface customary in Japan or the generally known “Bluetooth” air interface.

Alternatively, instead of the analog subscriber access adapter (voice modem), it is also possible to use a digital subscriber access adapter, such as an ISDN-TA, etc. In 25 Figure 1, the Internet telephone adapter includes a base unit B and a subscriber access adapter VM which is of discrete design. The subscriber access adapter also can be incorporated directly in the base unit B, however. Preferably, the base unit B used can be the GIGASET M101 data terminal. However, it is also possible to use any other base unit which allows data conversion between the respective protocol domains as a 30 result of an additional modification.

Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto

without departing from the spirit and scope of the present invention as set forth in the hereafter appended claims.

#### ABSTRACT OF THE DISCLOSURE

An Internet telephone adapter for setting up voice/data links, where a data conversion unit for data conversion between a subscriber terminal interface and a subscriber access adapter interface allows connection both to a packet-switching communications network and to a line-switching communications network.

In the claims:

On page 11, cancel line 1, and substitute the following left-hand justified heading therefor:

**CLAIMS**

5 Please cancel claims 1-13, without prejudice, and substitute the following claims therefor:

14. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks, comprising:

10 a base unit for setting up a subscriber terminal interface and a standard data interface;

a subscriber access adapter for connecting the base unit to a service provider for the line-switching networks and the packet-switching networks; and

15 a transfer method evaluation unit in the base unit which, based on a type of voice/data link identified, performs data conversion between the data on the subscriber terminal interface and the respective packet-switching network and line-switching network.

20 15. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein the subscriber terminal interface is an air interface and the standard data interface is a serial interface.

25 16. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 15, wherein the air interface is one of a DECT interface and a GSM interface standardized on the basis of ETSI, and the serial interface is one of a V.24 interface and a USB interface standardized on the basis of ITU.

30 17. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 15, wherein the air interface is one of a Bluetooth interface and a PHS interface.

18. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein the subscriber access adapter has one of an analog voice modem and a digital ISDN adapter.

5

19. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 18, wherein the subscriber access adapter has a selection unit for selecting data transfer in one of a data format and a voice format.

10

20. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein, for an outgoing call, the base unit actuates the subscriber access adapter and, for an incoming call, the subscriber access adapter actuates the base unit for a type of 15 voice/data link.

21. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein the base unit produces an IP address for a required call party when a voice/data link is 20 identified for a packet-switching network.

22. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein the data conversion in the transfer method evaluation unit for the packet-switching 25 network includes TCP/IP data protection.

23. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein the data conversion in the transfer method evaluation unit for the packet-switching 30 network includes a Voice-Over-IP protocol.

24. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein a standardized cordless subscriber terminal is registered on the base unit.

5 25. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein, when a voice/data link is identified for a line-switching network, the base unit actuates the subscriber access adapter such that the service provider connected thereto selects the line-switching network for a voice/data link.

10

26. An Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks as claimed in claim 14, wherein the subscriber access adapter is incorporated in the base unit.

15

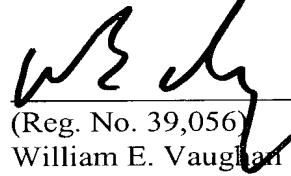
### R E M A R K S

The present amendment makes editorial changes and corrects typographical errors in the specification, which includes the Abstract, in order to conform the specification to the requirements of United States Patent Practice. No new matter is added thereby. Attached hereto is a marked-up version of the changes made to the specification by the present amendment. The attached page is captioned "Version With Markings To Show Changes Made".

20 25 30 In addition, the present amendment cancels original claims 1-13 in favor of new claims 14-26. Claims 14-26 have been presented solely because the revisions by red-lining and underlining which would have been necessary in claims 1-13 in order to present those claims in accordance with preferred United States Patent Practice would have been too extensive, and thus would have been too burdensome. The present amendment is intended for clarification purposes only and not for substantial reasons related to patentability pursuant to 35 U.S.C. §§101, 102, 103 or 112. Indeed, the cancellation of claims 1-13 does not constitute an intent on the part of the Applicants to surrender any of the subject matter of claims 1-13.

Early consideration on the merits is respectfully requested.

Respectfully submitted,



(Reg. No. 39,056)

William E. Vaughan

Bell, Boyd & Lloyd LLC

P.O. Box 1135

Chicago, Illinois 60690-1135

(312) 807-4292

Attorneys for Applicants

5

10

## **VERSIONS WITH MARKINGS TO SHOW CHANGES MADE**

### In The Specification:

The Specification of the present application, including the Abstract, has been amended as follows:

5

## SPECIFICATION

**TITLE OF THE INVENTION**

## INTERNET TELEPHONE ADAPTER

## BACKGROUND OF THE INVENTION

## 10 Description

## ~~Internet telephone adapter~~

The present invention relates to an Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks and, in particular, to an Internet telephone adapter for cordless applications.

The volume of voice and data links in communications networks using subscriber terminals, such as telephones, mobiles and computer units (PC), is growing at a great rate both in the business sector and in the private sector. For this continuously growing communication volume, incredible sums of money are spent every year both in the business sector and in the private sector.

Voice links ~~have~~ normally have been set up over “line-switching networks,” where a direct (point-to-point) link, as it were, has been set up between the call parties. By contrast, for the data traffic, “data networks” have been used which, as packet-switching networks, packaged the data to be transferred into individual packets and sent them to a receiver via a wide variety of paths. Particularly as a result of the aggregation of a multiplicity of packet-switching networks in the “Internet,” a worldwide packet-switching network has been created which can be used to transfer data, ~~in particular, in~~ particularly in a relatively inexpensive manner.

30 To utilize this great difference in cost between line-switching networks and packet-switching networks, the company Vocaltec has proposed the “Internet phone,” which also permits a voice link over a packet-switching network, such as the Internet. Figure 3 shows a simplified illustration of such an Internet phone configuration in

which a voice link between two subscribers is set up over a packet-switching network 1.

In ~~f~~Figure 3, a subscriber terminal TE(A) ~~comprises~~ includes a computer unit PC (personal computer) which has a sound card (not shown) with a connected loudspeaker LA and a microphone MI. The computer unit PC also has a subscriber access adapter (e.g., modem), which is not shown but which is connected to a service provider 2a (SP) via a subscriber line TL. In this case, the service provider 2a, as a node in a packet-switching bidirectional communications network 1, such as the Internet, provides access to this network.

10 In the same way, a second call party has a subscriber terminal TE(B) having a computer unit PC and an associated sound card with a connected microphone MI and a loudspeaker LA, the computer unit PC again setting up a connection to a service provider 2b (SP), preferably via a subscriber access adapter in the form of a modem. The service provider 2b again has an access facility to the packet-switching bidirectional communications network 1.

15 To set up a voice link between the subscriber terminal TE(A) and the subscriber terminal TE(B) over the packet-switching network 1, the computer units PC in question are operated using a program (e.g., from Vocaltec) ~~which is such that~~ wherein the voice data recorded by the respective microphone are transferred, packaged into small packets, over the packet-switching network 1 and are assembled at the receiver end such that a continuous voice signal is, in turn, obtained at the loudspeaker LA. In this way, it is possible to set up an extremely inexpensive voice link throughout the world over the Internet, for example.

20 However, a drawback of a such a solution is that it is not possible to use conventional telephones; and, hence, a connection can be set up only between two Internet telephones having appropriate computer units PC.

25 The document WO 98/42104 has, therefore, disclosed a system and a method for setting up a voice link over both a packet-switching network and a line-switching network which now also allow "Internet telephones" to be connected to "normal telephones." In this context, however, the Internet telephones still ~~comprise~~ include a computer-assisted system with a microphone and a loudspeaker and a specifically

aligned local service provider for coupling both the line-switching data and the packet-switching data.

The document US 5,838,665 describes another adapter apparatus which can be used to couple the Internet telephone systems described above to conventional telephones. In this context, connecting a normal telephone to an "Internet telephone system" makes it possible to provide, by way of example, multiparty services, etc., between the different systems. However, a drawback with this system, too, is that a computer assisted terminal unit (PC) still produces the "Internet telephone," which is why it is rejected by a large number of users.

The present invention is, therefore, based on the object of directed toward providing an Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks which is both inexpensive and user friendly. The invention achieves this object by means of the features of patent claim 1.

## 15 SUMMARY OF THE INVENTION

Particularly the use Pursuant to the present invention, use is made of a base unit having a transfer method evaluation unit which, on the basis of the type of voice/data link identified, performs data conversion between the data on a subscriber terminal interface and the packet-switching network or the line-switching network results in an Internet telephone adapter which is extremely simple to use and, without using a complicated computer system (PC), turns any conventional subscriber terminal into a terminal which allows a voice/data link both over line-switching networks and over packet-switching networks.

Preferably, the subscriber terminal interface comprises includes a DECT interface based on the ETSI standard, and the standard data interface comprises includes a serial V.24 interface based on the ITU standard. Such an embodiment has already has been implemented, by way of example, in the Gigaset M101 data terminal from the company Siemens, which allows conventional cordless telephones to be converted into cordless Internet telephones by means of via a slight modification to the base station operating as base unit. In this context, the subscriber access adapter used can preferably can be an analog voice modem or a digital ISDN access adapter.

Preferably, the data conversion in the base unit for a connection over the packet-switching network involves performing TCP/IP data protection, which results in an alignment with the Internet.

Particularly when a cordless application is used, the data conversion involves  
5 converting the received voice/data information from a DECT-GAP standard to the Voice-Over-IP protocol and vice versa.

Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

10

#### BRIEF DESCRIPTION OF THE FIGURES

~~The further subclaims identify further advantageous refinements of the invention.~~

~~The invention is described in more detail below using an exemplary embodiment with reference to the drawing, in which:~~

15

~~f~~Figure 1 shows a simplified illustration of an Internet telephone system with an inventive Internet telephone adapter;

~~f~~Figure 2 shows a schematic illustration of a protocol structure for the system shown in ~~f~~Figure 1; and,

20

~~f~~Figure 3 shows a simplified illustration of an Internet telephone system based on the prior art.

#### DETAILED DESCRIPTION OF THE INVENTION

25

Figure 1 shows a simplified illustration of an Internet telephone system for setting up a voice/data link over a line-switching network 1' or a packet-switching network 1. In ~~f~~Figure 1, a subscriber terminal TE is connected via a subscriber terminal interface LS to the Internet telephone adapter ITA, which is itself connected to a service provider 2 (SP) via a subscriber line TL. In ~~f~~Figure 1, the service provider 2 allows connection both to a packet-switching network 1, which preferably ~~comprises~~ includes the Internet, or to a line-switching network 1', which preferably ~~comprises~~ includes a public telephone network (Public Switched Telephone Network, PSTN).

30

As has already been described above, voice and data are packaged into packets in the packet-switching network 1 and are sent to the network 1 using a destination address. When they have arrived at the destination address, the individual packets are

assembled again according to their prescribed order and are output on a subscriber (not shown). By contrast, in the line-switching network 1', a direct connection is set up between the respective subscribers, and the information is transferred in the form of voice or data.

5 The Internet telephone adapter ITA essentially ~~comprises~~includes a base unit B which is connected to a subscriber access adapter VM via a standard data interface V.24.

10 In the preferred exemplary embodiment shown in ~~Figure~~ 1, the subscriber terminal TE ~~comprises~~includes a cordless telephone for setting up an air interface LS based on the ETSI standard DECT. Since such a subscriber terminal TE is able to transmit only voice, the air interface LS is based on the DECT-GAP standard. At the opposite end, the air interface LS shown in ~~Figure~~ 1 is set up by a base station which acts as a base unit B and preferably corresponds essentially to the cordless GIGASET M101 data terminal from Siemens. Such a base unit essentially ~~comprises~~includes an air interface unit LE for setting up the air interface LS, a data interface unit SS for setting up the standard data interface V.24, and a control unit SE which controls both the air interface unit LE and the data interface unit SS. Preferably, the standard data interface V.24 used is a serial interface based on ITU-V.24 standard. It is also possible to use any other interface, however, such as parallel interfaces, USB, fire wire, etc.

15 20 On the standard data interface V.24, the subscriber access adapter VM is connected in order to set up a connection to the service provider 2 (SP). Preferably, the subscriber access adapter VM ~~comprises~~includes an "analog voice modem," which permits the transfer of information both in a data format using a modem M or in a voice format using a digital/analog converter unit V (voice). In this context, the respective transfer is selected by ~~means of~~via a selection unit AE, which ~~can~~ preferably can be programmed with the aid of standardized AT-Hayes commands using the standard data interface V.24.

25 To set up an "Internet voice/data link," it is necessary for a multiplicity of functions, preferably performed by the control unit SE, to be implemented in the base unit B. Particularly when the data terminal GIGASET M101 is used, the inventive Internet telephone adapter ITA can be produced by slightly modifying (software, firmware) the base unit B and using a conventional voice modem VM. In this context,

the control unit SE in the base unit B needs to implement a dialing evaluation unit which makes it possible to distinguish a normal voice/data link, (i.e., a link over the line-switching network 1'), from an Internet voice/data link, (i.e., a link over the packet-switching network 1). For this purpose, a number plan is designed, for 5 example, which makes it possible to make this distinction using currently available dialing digits (such as 0 to 9, \*, #).

In the case of an Internet voice/data link initiated with “#,” for example, a selection to be produced by the base unit B ~~comprises~~—includes—the IP address (IP, Internet protocol) of the required call party. In this case, the base unit B also uses the 10 standard data interface V.24 to select a modem mode on the voice modem, as a result of which the information is sent in the data format via the modem M to the service provider 2 with the IP address produced.

If, on the other hand, a normal voice/data link is to be set up (e.g., a normal telephone number is dialed without “#” in front), then the base unit B needs to actuate 15 the selection unit AE in the voice modem VM such that the converter unit V is selected and the voice data are forwarded transparently, as it were, to the service provider 2. Since there is no IP address in this case, the service provider 2 would set up the link over the network 1'.

In another case (not shown), the air interface LS also can ~~also~~—be used to 20 connect a data subscriber terminal which transmits exclusively data. These data are, in turn, transmitted by the voice modem VM using the modem M, but with no IP address being added. The IP address ~~can~~—now can be used by the service provider 2 to establish whether transmission is to be produced using the packet-switching network 1, (i.e., over the Internet), or a conventional connection over the line-switching network 25 1'.

To set up an Internet voice/data link, however, it is not yet sufficient to add an IP address on the basis of the evaluated dialing digits from the subscriber terminal TE. Instead, the base unit B needs to set up data conversion between the air interface LS and the protocol required for the packet-switching network 1.

30 Figure 2 shows a schematic illustration of a protocol structure for the Internet telephone system shown in ~~ff~~Figure 1. Figure 2 describes the protocol structure for the preferred exemplary embodiment ~~comprising~~—including—a DECT-GAP mobile part or

subscriber terminal TE and an AT-Hayes voice modem VM connected via a serial V.24 interface. Accordingly, a DECT-GAP protocol is used between subscriber terminal TE and base unit B on the air interface LS. The control unit SE in the base unit B implements a data conversion unit IWU (interworking unit) whose task is to 5 connect the different protocol domains to one another. More precisely, the data conversion unit IWU in the base unit B monitors connection setup on the air interface side using its associated DECT-GAP protocol, with setup of a connection being accepted and the dialing which comes from the cordless subscriber terminal TE, (i.e., the dialing digits 0 to 9, \*, #, etc.), being evaluated. When an Internet voice/data link 10 is identified (e.g., “#” in front), the base unit B switches the voice modem VM to modem mode, and the modem M is prompted to dial up the service provider 2. Once the connection has been set up, the data sent by the air interface LS are converted on the basis of the Voice-Over-IP protocol and are sent, protected by ~~means of~~ via TCP/IP data protection (transfer control protocol/Internet protocol), to the IP address obtained 15 in the dialing.

Particularly when the subscriber access adapter VM ~~comprises~~ includes a voice modem, it is possible to set up not only the Internet/data link but also a normal voice/data link over the line-switching network 1'. In this case, for example when the dialing digit “#” is not included, the Internet protocols (TCP/IP, Voice-Over-IP 20 protocol) are avoided by the data conversion unit IWU and the number, or dialing digits, received from the cordless subscriber terminal TE are forwarded to the voice modem VM using AT-Hayes commands, for example, in order to prompt the voice modem VM to dial this number. In this case, the information sent by the subscriber terminal TE is forwarded as voice data by the service provider 2 over the line-switching network 1'.

In order, on the other hand, to be able to receive an incoming internal voice/data link, the Internet telephone adapter ITA naturally needs to be “online.” For this purpose, the service provider 2 can provide certain services which allow not only dialing into the Internet or packet-switching network 1, but also calling from the 30 packet-switching network 1.

In this way, the subscriber terminal TE ~~can also~~ can constantly be reached constantly via an Internet/data link.

The Internet telephone adapter described above has been described with reference to ~~Figures~~ 1 and 2 using a cordless subscriber terminal and an analog subscriber access adapter. It is not limited to these, however, but rather ~~comprises~~ includes any other subscriber terminal interfaces for connecting subscriber terminals, 5 such as data terminals, corded telephones, etc. In this context, the air interface used is preferably a DECT interface based on the ETSI standard; ~~h~~However, it is also possible to use, by way of example, the PHS air interface customary in Japan or the generally known “Bluetooth” air interface.

Alternatively, instead of the analog subscriber access adapter (voice modem), it 10 is also possible to use a digital subscriber access adapter, such as an ISDN-TA, etc. In ~~Figure~~ 1, the Internet telephone adapter ~~comprises~~ includes a base unit B and a subscriber access adapter VM which is of discrete design. The subscriber access adapter ~~can also~~ can be incorporated directly in the base unit B, however. Preferably, the base unit B used can be the GIGASET M101 data terminal. However, it is also 15 possible to use any other base unit which allows data conversion between the respective protocol domains as a result of an additional modification.

Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the present invention as set forth in the 20 hereafter appended claims.

## ABSTRACT OF THE DISCLOSURE

### Abstract

#### 5 Internet telephone adapter

The invention relates to an Internet telephone adapter (ITA) for setting up voice/data links, where a data conversion unit (DWU) for data conversion between a subscriber terminal interface (LS) and a subscriber access adapter interface (V.24) 10 allows connection both to a packet-switching communications network and to a line-switching communications network.

#### Figure 2

GR 99 P 2906

3/pr/p

## Description

## Internet telephone adapter

5 The present invention relates to an Internet telephone adapter for setting up voice/data links in line-switching networks and packet-switching networks and, in particular, to an Internet telephone adapter for cordless applications.

10 The volume of voice and data links in communications networks using subscriber terminals, such as telephones, mobiles and computer units (PC), is growing at a great rate both in the business sector and in the 15 private sector. For this continuously growing communication volume, incredible sums of money are spent every year both in the business sector and in the private sector.

20 Voice links have normally been set up over "line-switching networks", where a direct (point-to-point) link, as it were, has been set up between the call parties. By contrast, for the data traffic, "data networks" have been used which, as packet-switching 25 networks, packaged the data to be transferred into individual packets and sent them to a receiver via a wide variety of paths. Particularly as a result of the aggregation of a multiplicity of packet-switching networks in the "Internet", a worldwide packet-switching network has been created which can be used to 30 transfer data, in particular, in a particularly inexpensive manner.

35 To utilize this great difference in cost between line-switching networks and packet-switching networks, the company Vocaltec has proposed the "Internet phone", which also permits a voice link over a packet-switching network, such as the Internet. Figure

3 shows a simplified illustration of such an Internet phone configuration in which a voice link between two subscribers is set up over a packet-switching network 1.

5

In figure 3, a subscriber terminal TE(A) comprises a computer unit PC (personal computer) which has a sound card (not shown) with a connected loudspeaker LA and a microphone MI. The computer unit PC also has a subscriber access adapter (e.g. modem), which is not shown but which is connected to a service provider 2a (SP) via a subscriber line TL. In this case, the service provider 2a, as a node in a packet-switching bidirectional communications network 1, such as the 15 Internet, provides access to this network.

In the same way, a second call party has a subscriber terminal TE(B) having a computer unit PC and an associated sound card with a connected microphone MI and a loudspeaker LA, the computer unit PC again setting up a connection to a service provider 2b (SP), preferably via a subscriber access adapter in the form of a modem. The service provider 2b again has an access facility to the packet-switching bidirectional 25 communications network 1.

To set up a voice link between the subscriber terminal TE(A) and the subscriber terminal TE(B) over the packet-switching network 1, the computer units PC in question are operated using a program (e.g. from Vocaltec) which is such that the voice data recorded by the respective microphone are transferred, packaged into small packets, over the packet-switching network 1 and are assembled at the receiver end such that a 35 continuous voice signal is in turn obtained at the loudspeaker LA. In this

way, it is possible to set up an extremely inexpensive voice link throughout the world over the Internet, for example.

5 However, a drawback of such a solution is that it is not possible to use conventional telephones, and hence a connection can be set up only between two Internet telephones having appropriate computer units PC.

10 The document WO 98/42104 has therefore disclosed a system and a method for setting up a voice link over both a packet-switching network and a line-switching network which now also allow "Internet telephones" to be connected to "normal telephones". In this context, 15 however, the Internet telephones still comprise a computer-assisted system with a microphone and a loudspeaker and a specifically aligned local service provider for coupling both the line-switching data and the packet-switching data.

20 The document US 5,838,665 describes another adapter apparatus which can be used to couple the Internet telephone systems described above to conventional telephones. In this context, connecting a normal 25 telephone to an "Internet telephone system" makes it possible to provide, by way of example, multiparty services etc. between the different systems. However, a drawback with this system, too, is that a computer assisted terminal unit (PC) still produces the 30 "Internet telephone", which is why it is rejected by a large number of users.

The invention is therefore based on the object of providing an Internet telephone adapter for setting up 35 voice/data links in line-switching networks and packet-switching networks which is both inexpensive and user friendly.

The invention achieves this object by means of the features of patent claim 1.

Particularly the use of a base unit having a transfer 5 method evaluation unit which, on the basis of the type of voice/data link identified, performs data conversion between the data on a subscriber terminal interface and the packet-switching network or the line-switching network results in an Internet telephone adapter which 10 is extremely simple to use and, without using a complicated computer system (PC), turns any conventional subscriber terminal into a terminal which allows a voice/data link both over line-switching networks and over packet-switching networks.

15 Preferably, the subscriber terminal interface comprises a DECT interface based on the ETSI standard, and the standard data interface comprises a serial V.24 interface based on the ITU standard. Such an embodiment 20 has already been implemented, by way of example, in the Gigaset M101 data terminal from the company Siemens, which allows conventional cordless telephones to be converted into cordless Internet telephones by means of a slight modification to the base station operating as 25 base unit. In this context, the subscriber access adapter used can preferably be an analog voice modem or a digital ISDN access adapter.

30 Preferably, the data conversion in the base unit for a connection over the packet-switching network involves performing TCP/IP data protection, which results in an alignment with the Internet.

35 Particularly when a cordless application is used, the data conversion involves converting the received voice/data information from a DECT-GAP standard to the Voice-Over-IP protocol and vice versa.

The further subclaims identify further advantageous refinements of the invention.

5 The invention is described in more detail below using an exemplary embodiment with reference to the drawing, in which:

10 figure 1 shows a simplified illustration of an Internet telephone system with an inventive Internet telephone adapter;

15 figure 2 shows a schematic illustration of a protocol structure for the system shown in figure 1; and

20 figure 3 shows a simplified illustration of an Internet telephone system based on the prior art.

25 20 Figure 1 shows a simplified illustration of an Internet telephone system for setting up a voice/data link over a line-switching network 1' or a packet-switching network 1. In figure 1, a subscriber terminal TE is connected via a subscriber terminal interface LS to the Internet telephone adapter ITA, which is itself connected to a service provider 2 (SP) via a subscriber line TL. In figure 1, the service provider 2 allows connection both to a packet-switching network 1, which preferably comprises the Internet, or to a line-switching network 1', which preferably comprises a public telephone network (Public Switched Telephone Network, PSTN).

30 35 As has already been described above, voice and data are packaged into packets in the packet-switching network 1 and are sent to the network 1 using a destination address. When they have arrived at the destination

GR 99 P 2906

- 5a -

address, the individual packets are assembled again according to their prescribed

order and are output on a subscriber (not shown). By contrast, in the line-switching network 1', a direct connection is set up between the respective subscribers, and the information is transferred in the 5 form of voice or data.

The Internet telephone adapter ITA essentially comprises a base unit B which is connected to a subscriber access adapter VM via a standard data 10 interface V.24.

In the preferred exemplary embodiment shown in figure 1, the subscriber terminal TE comprises a cordless telephone for setting up an air interface LS based on the ETSI standard DECT. Since such a subscriber 15 terminal TE is able to transmit only voice, the air interface LS is based on the DECT-GAP standard. At the opposite end, the air interface LS shown in figure 1 is set up by a base station which acts as a base unit B and preferably corresponds essentially to the cordless 20 GIGASET M101 data terminal from Siemens. Such a base unit essentially comprises an air interface unit LE for setting up the air interface LS, a data interface unit SS for setting up the standard data interface V.24, and a control unit SE which controls both the air interface 25 unit LE and the data interface unit SS. Preferably, the standard data interface V.24 used is a serial interface based on ITU-V.24 standard. It is also possible to use any other, interface, however, such as parallel 30 interfaces, USB, fire wire, etc.

On the standard data interface V.24, the subscriber access adapter VM is connected in order to set up a connection to the service provider 2 (SP). Preferably, 35 the subscriber access adapter VM comprises an "analog voice modem", which permits the transfer of information both

order and are output on a subscriber (not shown). By contrast, in the line-switching network 1', a direct connection is set up between the respective subscribers, and the information is transferred in the 5 form of voice or data.

The Internet telephone adapter ITA essentially comprises a base unit B which is connected to a subscriber access adapter VM via a standard data 10 interface V.24.

In the preferred exemplary embodiment shown in figure 1, the subscriber terminal TE comprises a cordless telephone for setting up an air interface LS based on the ETSI standard DECT. Since such a subscriber terminal TE is able to transmit only voice, the air interface LS is based on the DECT-GAP standard. At the opposite end, the air interface LS shown in figure 1 is set up by a base station which acts as a base unit B and preferably corresponds essentially to the cordless GIGASET M101 data terminal from Siemens. Such a base unit essentially comprises an air interface unit LE for setting up the air interface LS, a data interface unit SS for setting up the standard data interface V.24, and a control unit SE which controls both the air interface unit LE and the data interface unit SS. Preferably, the standard data interface V.24 used is a serial interface based on ITU-V.24 standard. It is also possible to use any other interface, however, such as parallel 20 interfaces, USB, fire wire, etc.

On the standard data interface V.24, the subscriber access adapter VM is connected in order to set up a connection to the service provider 2 (SP). Preferably, 35 the subscriber access adapter VM comprises an "analog voice modem", which permits the transfer of information both

in a data format using a modem M or in a voice format using a digital/analog converter unit V (voice). In this context, the respective transfer is selected by means of a selection unit AE, which can preferably be 5 programmed with the aid of standardized AT-Hayes commands using the standard data interface V.24.

To set up an "Internet voice/data link", it is necessary for a multiplicity of functions, preferably 10 performed by the control unit SE, to be implemented in the base unit B. Particularly when the data terminal GIGASET M101 is used, the inventive Internet telephone adapter ITA can be produced by slightly modifying (software, firmware) the base unit B and using a 15 conventional voice modem VM. In this context, the control unit SE in the base unit B needs to implement a dialing evaluation unit which makes it possible to distinguish a normal voice/data link, i.e. a link over the line-switching network 1', from an Internet 20 voice/data link, i.e. a link over the packet-switching network 1. For this purpose, a number plan is designed, for example, which makes it possible to make this distinction using currently available dialing digits (such as 0 to 9, \*, #).

25 In the case of an Internet voice/data link initiated with "#", for example, a selection to be produced by the base unit B comprises the IP address (IP, Internet protocol) of the required call party. In this case, the 30 base unit B also uses the standard data interface V.24 to select a modem mode on the voice modem, as a result of which the information is sent in the data format via the modem M to the service provider 2 with the IP address produced.

35 If, on the other hand, a normal voice/data link is to be set up (e.g. a normal telephone number is dialed without

"#" in front), then the base unit B needs to actuate the selection unit AE in the voice modem VM such that the converter unit V is selected and the voice data are forwarded transparently, as it were, to the service provider 2. Since there is no IP address in this case, the service provider 2 would set up the link over the network 1'.

In another case (not shown), the air interface LS can also be used to connect a data subscriber terminal which transmits exclusively data. These data are in turn transmitted by the voice modem VM using the modem M, but with no IP address being added. The IP address can now be used by the service provider 2 to establish whether transmission is to be produced using the packet-switching network 1, i.e. over the Internet, or a conventional connection over the line-switching network 1'.

To set up an Internet voice/data link, however, it is not yet sufficient to add an IP address on the basis of the evaluated dialing digits from the subscriber terminal TE. Instead, the base unit B needs to set up data conversion between the air interface LS and the protocol required for the packet-switching network 1.

Figure 2 shows a schematic illustration of a protocol structure for the Internet telephone system shown in figure 1. Figure 2 describes the protocol structure for the preferred exemplary embodiment comprising a DECT-GAP mobile part or subscriber terminal TE and an AT-Hayes voice modem VM connected via a serial V.24 interface. Accordingly, a DECT-GAP protocol is used between subscriber terminal TE and base unit B on the air interface LS. The control unit SE in the base unit B implements a data conversion unit IWU (interworking unit) whose task is to connect

the different protocol domains to one another. More precisely, the data conversion unit IWU in the base unit B monitors connection setup on the air interface side using its associated DECT-GAP protocol, with setup 5 of a connection being accepted and the dialing which comes from the cordless subscriber terminal TE, i.e. the dialing digits 0 to 9, \*, #, etc., being evaluated. When an Internet voice/data link is identified (e.g. "#" in front), the base unit B switches the voice modem 10 VM to modem mode, and the modem M is prompted to dial up the service provider 2. Once the connection has been set up, the data sent by the air interface LS are converted on the basis of the Voice-Over-IP protocol and are sent, protected by means of TCP/IP data 15 protection (transfer control protocol/Internet protocol), to the IP address obtained in the dialing.

Particularly when the subscriber access adapter VM comprises a voice modem, it is possible to set up not 20 only the Internet/data link but also a normal voice/data link over the line-switching network 1'. In this case, for example when the dialing digit "#" is not included, the Internet protocols (TCP/IP, Voice-Over-IP protocol) are avoided by the data conversion 25 unit IWU and the number, or dialing digits, received from the cordless subscriber terminal TE are forwarded to the voice modem VM using AT-Hayes commands, for example, in order to prompt the voice modem VM to dial this number. In this case, the information sent by the 30 subscriber terminal TE is forwarded as voice data by the service provider 2 over the line-switching network 1'.

In order, on the other hand, to be able to receive an 35 incoming internal voice/data link, the Internet telephone adapter ITA naturally needs to be "online". For this purpose, the service provider 2 can provide certain services which allow not only dialing into the

GR 99 P 2906

- 9a -

Internet or packet-switching network 1, but also  
calling from the packet-switching network 1.

In this way, the subscriber terminal TE can also constantly be reached via an Internet/data link.

The Internet telephone adapter described above has been 5 described with reference to figures 1 and 2 using a cordless subscriber terminal and an analog subscriber access adapter. It is not limited to these, however, but rather comprises any other subscriber terminal interfaces for connecting subscriber terminals, such as 10 data terminals, corded telephones, etc. In this context, the air interface used is preferably a DECT interface based on the ETSI standard; however, it is also possible to use, by way of example, the PHS air interface customary in Japan or the generally known 15 "Bluetooth" air interface.

Alternatively, instead of the analog subscriber access adapter (voice modem), it is also possible to use a digital subscriber access adapter, such as an ISDN-TA, 20 etc. In figure 1, the Internet telephone adapter comprises a base unit B and a subscriber access adapter VM which is of discrete design. The subscriber access adapter can also be incorporated directly in the base unit B, however. Preferably, the base unit B used can 25 be the GIGASET M101 data terminal. However, it is also possible to use any other base unit which allows data conversion between the respective protocol domains as a result of an additional modification.

Patent Claims

1. An Internet telephone adapter for setting up voice/data link in line-switching networks (1) and 5 packet-switching networks (1') having a base unit (B) for setting up a subscriber terminal interface (LS) and a standard data interface (V.24); and a subscriber access adapter (VM) for connecting the 10 base unit (B) to a service provider (SP) for line-switching networks and packet-switching networks (1, 1'), characterized in that the base unit (B) has a transfer method evaluation unit (SE; IWU) which, on the basis of 15 the type of voice/data link identified, performs data conversion between the data on the subscriber terminal interface (LS) and the packet-switching network (1) or the line-switching network (1').
- 20 2. The Internet telephone adapter as claimed in patent claim 1, characterized in that the subscriber terminal interface (LS) is an air interface, and the standard data interface (V.24) is a serial interface.
- 25 3. The Internet telephone adapter as claimed in patent claim 2, characterized in that the air interface (LS) is a DECT or GSM interface standardized on the basis of ETSI, and 30 the serial interface (V.24) is a V.24 or USB interface standardized on the basis of ITU.
4. The Internet telephone adapter as claimed in patent claim 2, 35 characterized in that the air interface (LS) is a Bluetooth interface or PHS interface.

5. The Internet telephone adapter as claimed in one of patent claims 1 to 4, characterized in that the subscriber access adapter (VM) has an analog voice modem or a digital ISDN 5 adapter.

6. The Internet telephone adapter as claimed in patent claim 5, characterized in that the subscriber access adapter 10 (VM) has a selection unit (AE) for selecting data transfer in a data format (M) or a voice format (V).

7. The Internet telephone adapter as claimed in one of patent claims 1 to 6, 15 characterized in that, for an outgoing call, the base unit (B) actuates the subscriber access adapter (VM), and for an incoming call, the subscriber access adapter (VM) actuates the base unit (B) for the type of voice/data link.

20 8. The Internet telephone adapter as claimed in one of claims 1 to 7, characterized in that the base unit (B) produces an IP address for a required call party when a voice/data 25 link is identified for a packet-switching network (1).

9. The Internet telephone adapter as claimed in one of patent claims 1 to 8, 30 characterized in that the data conversion in the transfer method evaluation unit (SE, IWU) for the packet-switching network (1) comprises TCP/IP data protection.

10. The Internet telephone adapter as claimed in one 35 of patent claims 1 to 9,

characterized in that the data conversion in the transfer method evaluation unit (SE; IWU) for the packet-switching network (1) comprises a Voice-Over-IP protocol.

5

11. The Internet telephone adapter as claimed in one of patent claims 2 to 10,

characterized in that a standardized cordless subscriber terminal (TE) can be registered on the base 10 unit (B).

12. The Internet telephone adapter as claimed in one of patent claims 1 to 7,

characterized in that, when a voice/data link is 15 identified for a line-switching network (1'), the base unit (B) actuates the subscriber access adapter (VM) such that the service provider (SP) connected thereto selects the line-switching network (1') for a voice/data link.

20

13. The Internet telephone adapter as claimed in one of patent claims 1 to 12,

characterized in that the subscriber access adapter (VM) is incorporated in the base unit (B).

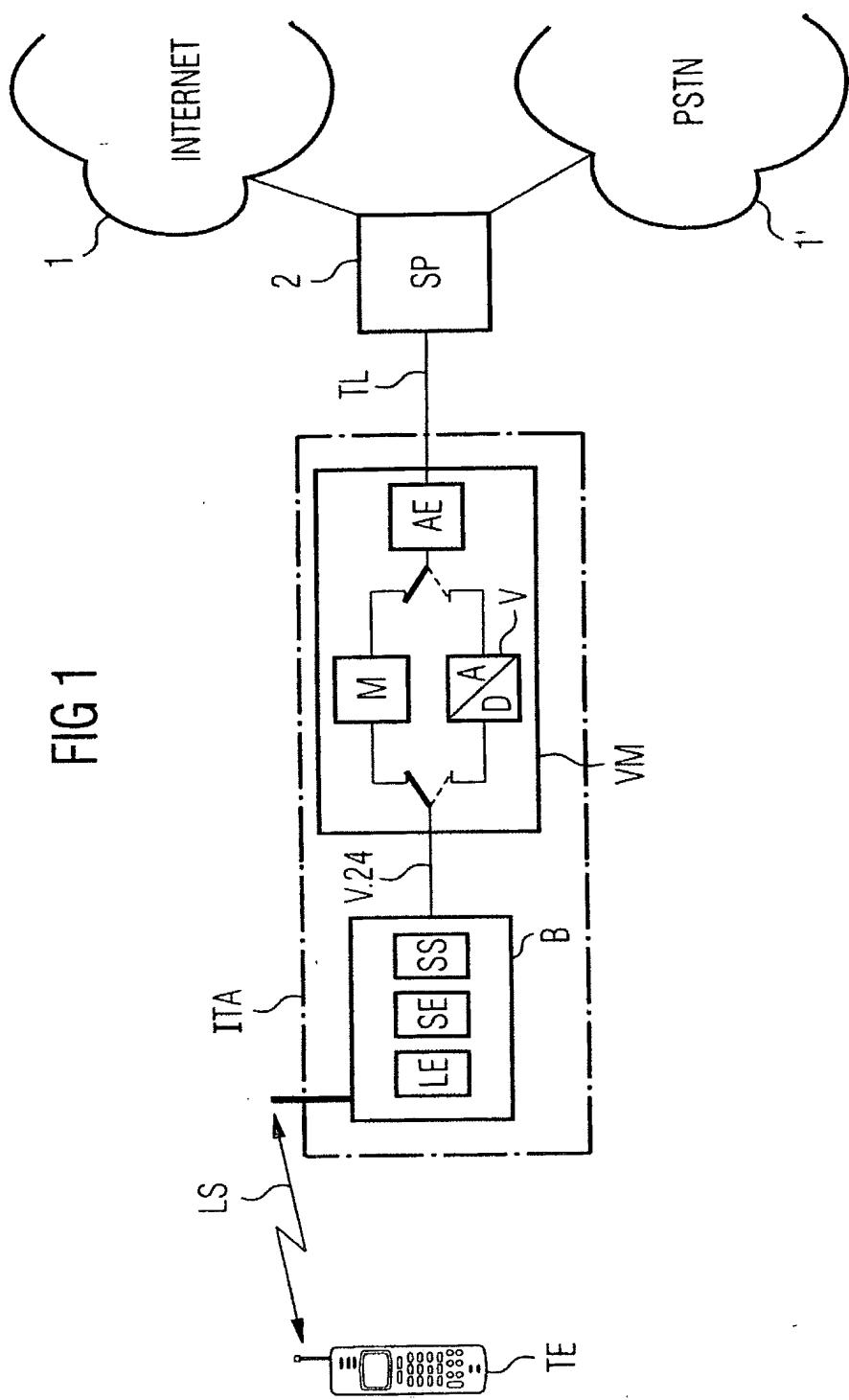
**Abstract**

**Internet telephone adapter**

The invention relates to an Internet telephone adapter (ITA) for setting up voice/data links, where a data conversion unit (IWU) for data conversion between a subscriber terminal interface (LS) and a subscriber access adapter interface (V.24) allows connection both to a packet-switching communications network and to a line-switching communications network.

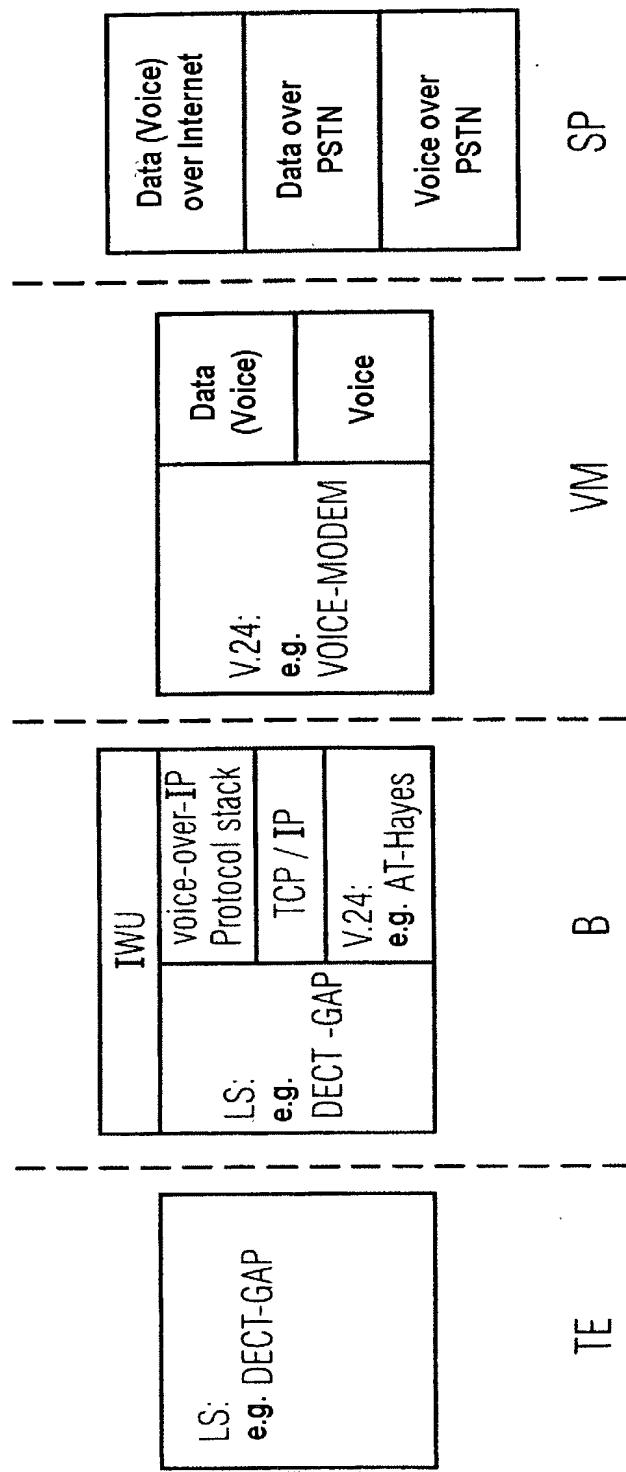
**Figure 2**

1/3



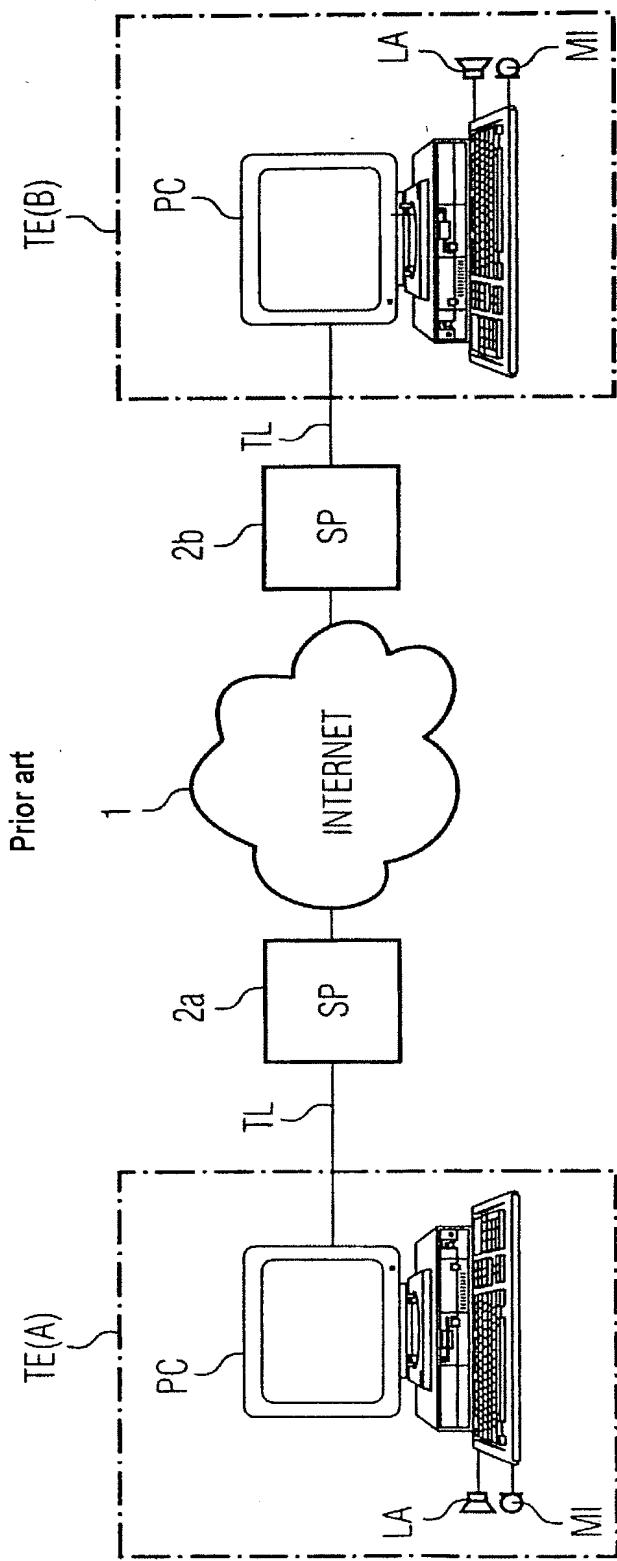
2/3

FIG 2



3/3

FIG 3



**Declaration and Power of Attorney For Patent Application**  
**Erklärung Für Patentanmeldungen Mit Vollmacht**  
**German Language Declaration**

Als nachstehend benannter Erfinder erkläre ich hiermit  
an Eides Statt

dass mein Wohnsitz, meine Postanschrift, und meine  
Staatsangehörigkeit den im Nachstehenden nach  
meinem Namen aufgeführten Angaben entsprechen,

dass ich, nach bestem Wissen der ursprüngliche, erste  
und alleinige Erfinder (falls nachstehend nur ein Name  
angegeben ist) oder ein ursprünglicher, erster und  
Miterfinder (falls nachstehend mehrere Namen  
aufgeführt sind) des Gegenstandes bin, für den dieser  
Antrag gestellt wird und für den ein Patent beantragt  
wird für die Erfindung mit dem Titel

**Internet-Telefonadapter**

deren Beschreibung

(zutreffendes ankreuzen)

hier beigefügt ist.

am 19.09.2000 als

PCT internationale Anmeldung

PCT Anmeldungsnummer PCT/DE00/03259

eingereicht wurde und am \_\_\_\_\_  
abgeändert wurde (falls tatsächlich abgeändert)

Ich bestätige hiermit, dass ich den Inhalt der obigen  
Patentanmeldung einschliesslich der Ansprüche  
durchgesehen und verstanden habe, die eventuell  
durch einen Zusatzantrag wie oben erwähnt abgeän-  
dert wurde

Ich erkenne meine Pflicht zur Offenbarung irgendwel-  
cher Informationen, die für die Prüfung der vorliegen-  
den Anmeldung in Einklang mit Absatz 37, Bundes-  
gesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind,  
an

Ich beanspruche hiermit auslandische Prioritätsvorteile  
gemass Abschnitt 35 der Zivilprozessordnung der  
Vereinigten Staaten, Paragraph 119 aller unten ange-  
gebenen Auslandsanmeldungen für ein Patent oder  
eine Erfindersurkunde, und habe auch alle Auslands-  
anmeldungen für ein Patent oder eine Erfindersurkun-  
de nachstehend gekennzeichnet, die ein Anmelde-  
datum haben, das vor dem Anmeldeatum der  
Anmeldung liegt, für die Priorität beansprucht wird.

As a below named inventor, I hereby declare that

My residence, post office address and citizenship are  
as stated below next to my name,

I believe I am the original, first and sole inventor (if only  
one name is listed below) or an original, first and joint  
inventor (if plural names are listed below) of the  
subject matter which is claimed and for which a patent  
is sought on the invention entitled

**Internet telephone adapter**

the specification of which

(check one)

is attached hereto.

was filed on 19.09.2000 as

PCT international application

PCT Application No. PCT/DE00/03259

and was amended on \_\_\_\_\_

(if applicable)

I hereby state that I have reviewed and understand the  
contents of the above identified specification, including  
the claims as amended by any amendment referred to  
above.

I acknowledge the duty to disclose information which is  
material to the examination of this application in  
accordance with Title 37, Code of Federal Regulations,  
§1 56(a).

I hereby claim foreign priority benefits under Title 35,  
United States Code, §119 of any foreign application(s)  
for patent or inventor's certificate listed below and have  
also identified below any foreign application for patent  
or inventor's certificate having a filing date before that  
of the application on which priority is claimed:

## German Language Declaration

Prior foreign applications  
Priorität beansprucht

Priority Claimed

|                   |           |   |   |                                     |
|-------------------|-----------|---|---|-------------------------------------|
| <u>19945663.1</u> | <u>DE</u> | <u>23.09.1999</u><br>(Day Month Year Filed)<br>(Tag Monat Jahr eingereicht) | <input checked="" type="checkbox"/> Yes<br>Ja | <input type="checkbox"/> No<br>Nein |
|                   |           |   | <input type="checkbox"/> Yes<br>Ja            | <input type="checkbox"/> No<br>Nein |
|                   |           |   | <input type="checkbox"/> Yes<br>Ja            | <input type="checkbox"/> No<br>Nein |

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozeßordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind

I hereby claim the benefit under Title 35 United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application

|  |  |   |  |
|--|--|---|--|
| <u>PCT/DE00/03259</u><br>(Application Serial No.)<br>(Anmeldeseriennummer) | <u>19.09.2000</u><br>(Filing Date D, M, Y)<br>(Anmeldedatum T, M, J) | <u>anhängig</u><br>(Status)<br>(patentiert, anhängig, aufgegeben) | <u>pending</u><br>(Status)<br>(patented, pending, abandoned) |
|  |  | <u>_____</u><br>(Status)<br>(patentiert, anhängig, aufgegeben)    | <u>_____</u><br>(Status)<br>(patented, pending, abandoned)   |

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden können, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

### German Language Declaration

VERTRETUNGSVOLLMACHT: Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt: (Name und Registrationsnummer anführen)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)



**29177** And I hereby appoint

PATENT TRADEMARK OFFICE

Telefongespräche bitte richten an:  
(Name und Telefonnummer)

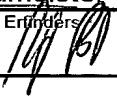
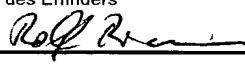
Direct Telephone Calls to: (name and telephone number)

Ext \_\_\_\_\_

Postanschrift:

Send Correspondence to:

Bell, Boyd & Lloyd LLC  
Three First National Plaza, 70 West Madison Street, Suite 3300 60602-4207 Chicago, Illinois  
Telephone: (001) 312 372 11 21 and Facsimile (001) 312 827 8185  
or  
**Customer No. 29177**

|   |  |   |                                     |
|---|--|---|-------------------------------------|
| Voller Name des einzigen oder ursprünglichen Erfinders:<br><b>1-00</b><br><b>Josef Baumeister</b>                 |  | Full name of sole or first inventor:<br><b>Josef Baumeister</b>       |                                     |
| Unterschrift des Erfinders<br> |  | Datum<br><b>06.01.2002</b>  | Inventor's signature<br>Date        |
| Wohnsitz<br><b>Borken, DEUTSCHLAND</b>  |  | Residence<br><b>Borken, GERMANY</b>                                   |                                     |
| Staatsangehörigkeit<br><b>DE</b>  |  | Citizenship<br><b>DE</b>  |                                     |
| Postanschrift<br><b>Emil-Nolde-Weg 11</b>   |  | Post Office Address<br><b>Emil-Nolde-Weg 11</b>                       |                                     |
| <b>46325 Borken</b>   |  | <b>46325 Borken</b>   |                                     |
| Voller Name des zweiten Miterfinders (falls zutreffend):<br><b>2-00</b><br><b>Rolf Biedermann</b>                 |  | Full name of second joint inventor, if any:<br><b>Rolf Biedermann</b> |                                     |
| Unterschrift des Erfinders<br> |  | Datum<br><b>6.2.02</b>  | Second Inventor's signature<br>Date |
| Wohnsitz<br><b>Ahaus, DEUTSCHLAND</b>   |  | Residence<br><b>Ahaus, GERMANY</b>                                    |                                     |
| Staatsangehörigkeit<br><b>DE</b>  |  | Citizenship<br><b>DE</b>  |                                     |
| Postanschrift<br><b>Solmsstr. 47a</b>   |  | Post Office Address<br><b>Solmsstr. 47a</b>                           |                                     |
| <b>48683 Ahaus</b>  |  | <b>48683 Ahaus</b>  |                                     |

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).